

Office Action Summary

Application No.
09/087,671

Applicant(s)

Mancuso et al.

Examiner

Coulter Henry

Group Art Unit

2722



☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-24 is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-24 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-9 and 22-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Mancuso et al. (5,870,495).

4. **Claims 1- 9 and 22-24** show the following limitations:

a post processing method comprising:

- a) dividing an input image into a plurality of image blocks; (**Col. 4, lines 4-7**)
- b) for each image block, estimating global features of said image block by providing information on an average content of image edges along horizontal and vertical directions of said image block (**Col. 5, lines 58-62**)

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c) for each pixel of an image block under examination, estimating local features for said pixel by providing information on content of image edges along horizontal and vertical directions of an image area near said pixel; and **(Col. 7, lines 1-8)**

d) modifying a value of said pixel according to both said global features of the image block to which said pixel belongs and said local features of the image area near said pixel. The modifying step including: **(Col. 7, lines 10-19)**

1) defining a set of predefined local features

2) determining degrees of coincidence (fuzzy calculation) of said local features of the image area near said pixel with each predefined local features of said set, said degrees of coincidence depending on said global features of the image block to which the pixel belongs; **(Col. 7, lines 19-26)**

3) making the value of said pixel equal to a weighted average of the value of said pixel and of the values of neighboring pixels, with the weighting factors depending on said degrees of coincidence of said local features with each of said predefined local features. **(Col. 7, lines 19-26)**

e) predefined weighting factors are associated with predetermined local features. **(Col. 7, lines 19-26; Col. 8, lines 65-66)**

f) image block under examination provides for applying vertical and horizontal Sobel operators to an image block under examination features. **(Col. 7, lines 19-26)**

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g) the Sobel operators are added together and used to form the global features of the block under examination features. (Col. 7, lines 19-26)

One can see from the examples shown about that Sobel operators are being used to correct and calculate gradient values for neighboring pixels of a pixels under examination. These values are then used in correction methods using fuzzy calculations of the pixel under examination.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mancuso et al (5,870,495).

Claims 10-15 show the following limitations:

a) horizontal and vertical processing windows each contains five pixels that are centered at said pixel under examination. *This reference does not explicitly show the use of horizontal and vertical processing windows. It does show however, the use of a radius (col. 9, line 6) a memory location a weighting factor will be added. The applied weighting factors will be added*

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in the same manner as they are applied at 0 °, 90 °, 180 °, and 270 ° angles of the radius. This can simply be a design consideration.

b) determining the degrees of membership of each horizontal and vertical Sobel operator output of the horizontal and vertical pattern to a first and second fuzzy set, evaluating activation degrees of a first and second set of fuzzy rules. (Col. 9, lines 18-25) *This references shows the use of the weighting factor being used according to the applied fuzzy rules to determine the applied weight.*

c) the degrees of membership of the horizontal and vertical Sobel operator outputs provides for determining a first, second, third and fourth set of membership functions depending on the global features. (Col. 7, line 65- Col. 8, line 36)

d) the first set of fuzzy rules being associated with the horizontal weight factors, a second set being associated with the vertical weighting factors. *This reference does not show the same set of fuzzy rules that are relied upon in this application. It is however, well known that fuzzy rules can be changed depending upon the desired effects needed. This can be inferred from the applied reference in that at Col. 7, line 58 where it is stated, "The rules that are applied are of the following kind, . . . " This shows that the rules can be left up to the inventor. The warranted fuzzy rules that are applied are simply a design consideration.*

e) the horizontal weight factors being determined by making a weighted average of the predefined horizontal weight factors, the vertical weight factors being determined by making a weighted average of the predefined vertical weight factors *see rejection of a above*

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f) the horizontal weight factors being applied to the horizontal processing window, the vertical weight factors being applied to the vertical processing window. *see rejection of a above*

7. **Claims 16-21** of this application are apparatus claims of the method claims 1-15 above. These claims contain the same limitations as the rejected claims 1-15 thus they carry the same rejections.

8. The following references were not used as a part of this rejection. They are see to contain information that is related to the art of this application. The examiner recommends review and consideration by the applicant.

5,937,101 Jeon et al.

5,883,983 Lee et al.

5,819,035 Devaney et al.

5,748,788 Moro

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Coulter Henry whose telephone number is (703) 306-5433. The examiner can normally be reached on M-Fri from 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Coles, can be reached on (703) 305-4712. The fax phone number for the organization where this application or proceeding is assigned is (703) 306-5406.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-6056.

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January 11, 2000


EDWARD L. COLES
SUPERVISORY PATENT EXAMINER
GROUP 2700